

Appl. No.: 10/804,746  
Amdt. Dated April 16, 2009  
Reply to Office Action of January 16, 2009

### **REMARKS/ARGUMENTS**

Claims 7-13 are pending. Claims 1-6 and 14-17 have been canceled without prejudice.

Claim 1 was rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 4,859,594 to Portier. Claims 1-4 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,723,242 to Ohkata et al. in view of Portier. Claims 1, 7, and 13-17 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,420,165 to Weinstein in view of U.S. Patent No. 6,521,444 to Numata and further in view of Portier. Claims 1-4, 7-10, and 13-17 were rejected as being unpatentable over Ohkata in view of Weinstein, Numata, and Portier. Claims 5, 6, 11, and 12 were rejected as unpatentable over Ohkata in view of Weinstein, Numata, and Portier, and further in view of U.S. Patent No. 5,563,066 to Buchanan.

#### **Summary of Claim Amendments**

Applicant has amended independent Claims 7 and 13 to recite that the *Bacillus midousuji* are cultured by a process comprising mixing a dioxin-containing substance comprising fly ash with a medium comprising a nutrient source of *Bacillus midousuji*, supplying oxygen to the medium, and controlling the temperature of the medium to 62° C or above, which allows activity of the *Bacillus midousuji*.

This is described in the specification, particularly at page 33 line 6 through page 38 line 17. Furthermore, based on the experiments summarized at page 50 line 19 through page 54 line 7, the discovery was made that the pellicle fraction of *Bacillus midousuji* cultured in the presence of fly ash breaks the ether bond bonding the two benzene rings, which is a characteristic structure of dioxins (page 54, lines 8-12).

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Response to Rejections

The claimed invention is not suggested by the cited references. The Office Action acknowledged that Weinstein and Numata fail to disclose any culturing of *Bacillus midousuji* in the presence of a chlorinated aromatic compound of any kind.

Portier was cited as allegedly teaching that microorganisms can be pretreated in the presence of the specific organic pollutant of interest in order to allow the microorganisms to adapt to the toxicant and assimilate it as a preferred source of carbon. Based on this, the Office Action asserted it would have been obvious to modify Weinstein/Numata to culture the *Bacillus midousuji* in the presence of dioxins.

However, none of the cited reference discloses or fairly suggests the culturing of *Bacillus midousuji* by a process comprising mixing a dioxin-containing substance comprising fly ash with a medium comprising a nutrient source of *Bacillus midousuji*, supplying oxygen to the medium, and controlling the temperature of the medium to 62° C or above. Thus, for this reason alone, the rejections cannot be sustained.

Furthermore, the cited references do not teach or suggest that the “adaptation” of the microorganism to be able to use the toxicant as a preferred carbon source, as taught by Portier, would be beneficial to the ability of the *crushed pellicle fraction* of the microorganism to break the ether bond of dioxins. Indeed, the rationale explained in Portier is that the live organism, having adapted to use the toxicant as a preferred carbon source, is able to thrive on the toxicant and thereby detoxify that substance (col. 9, lines 3-40). However, nothing in Portier or any other cited reference teaches or remotely suggests that a *Bacillus midousuji* cultured in the presence of a toxicant (fly ash, which contains dioxins) would be effective to break dioxin’s ether bond after being crushed so that the organism is no longer alive and able to consume the toxicant.

For these reasons, it is submitted that the method of Claim 7 is patentable over the cited references.

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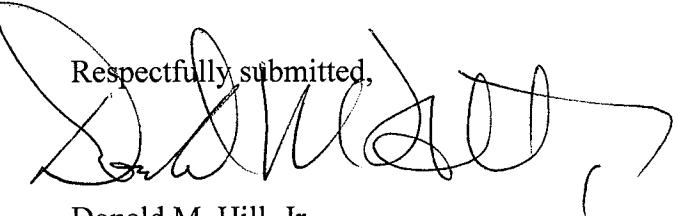
Similarly, the preparation of Claim 13 is not suggested by the cited references.

Accordingly, it is submitted that the cited references completely fail to teach or suggest the claimed method and preparation set forth in Claims 7-13.

### Conclusion

Based on the above remarks, Applicant respectfully submits that the cited references do not render the pending Claims 7-13 unpatentable, and therefore the application is in condition for allowance.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefor (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,  
  
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